

REMARKS

Claims 1 through 7, 10 through 13, and 15 through 19 are in the application. Claims 1, 10, and 15 are the independent claims herein. No new matter has been added. Reconsideration and further examination are respectfully requested.

Claim Rejections

Claims 1 through 4, 10 through 13, and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,628,106 ("Batarseh") in combination with U.S. Patent No. 4,967,201 ("Rich"). Claims 5 through 7 and 16 through 19 are rejected as being unpatentable over U.S. Patent No. 6,218,817 ("Change") in combination with U.S. Patent No. 6,853,169 ("Burstein") and further in combination with Rich and U.S. Patent No. 6,865,682 B1 ("Talbot"). Reconsideration and withdrawal of the rejections are respectfully requested.

Claims 1, 10, and 15

Claim 1 describes an apparatus that comprises a substrate, a voltage regulator converter and a voltage regulator controller coupled to the voltage regulator converter. The voltage regulator converter comprises N phases, where N is greater than one, and each of the N phases is located in a respective one of N areas of the substrate. A first one of the N phases is to generate more heat than a second one of the N phases, and a first area of the substrate in which the first one of the N phases is located is less thermally-sensitive than a second area of the substrate in which the second one of the N phases is located.

As mentioned in the previous response, the art of record is not seen to disclose or to suggest the above-mentioned features. In particular, the art of record is not seen to disclose or to suggest a first one of N phases to generate more heat than a second one of N phases, wherein a first area of a substrate in which the first one of the N phases is located is less thermally-sensitive than a second area of the substrate in which the second one of the N phases is located.

Batarseh discloses a multiphase DC/DC converter that provides “independent output voltage regulation and phases current regulation.” See Abstract. As conceded in the Office Action, Batarseh fails to disclose or suggest a first area of the substrate in which the first one of the N phases is located is less thermally sensitive than a second area of the substrate.

Rich discloses a heat sink interface means 60 coupled to thermal conductors 24 and 24'. At column 3, lines 5 through 45, Rich describes thermal conductors 24 that carry thermal energy away from a microwave signal processing means, a control signal processing means, and a power conditioning means. Thermal energy may also be carried by bulk thermal conductors 24' which are selected portions of the electrical conductors and bulk energy dissipation within the substrate. The thermal conductors 24 and the bulk thermal conductors 24' carry thermal energy to the heat sink interface means 60.

The Office Action cites the abstract, lines 1 through 30, as teaching a first area of the substrate in which “the first one of the N phases is located is less thermally sensitive than a second area of the substrate”. The abstract describes thermal conductors located in thermal proximity of selected portions of a microwave signal processing means, a power condition means, and a control signal processing means to conduct thermal energy away from these means. However, nowhere does the abstract disclose or suggest a thermally sensitive area that is less or more sensitive than any other area, nor does the abstract disclose phases located in thermally sensitive areas. The abstract also fails to disclose or to suggest locating an element that generates a greater amount of heat in a less thermally sensitive area of a substrate and an element that generates a lesser amount of heat in a more thermally sensitive area.

The remaining portions of Rich have been reviewed in detail and are not seen to contain any disclosure or suggestion of a first area of the substrate in which the first one of the N phases is located is less thermally sensitive than a second area of the substrate. In view of the foregoing, amended independent claim 1 and its related dependent claims are believed to be in condition for allowance.

Claims 10 and 15 relate to a method and a system, respectively, in which a first one of N voltage regulator phases is to generate more heat than a second one of N voltage regulator phases, and wherein a first area of a substrate in which the first one N voltage regulator phases is

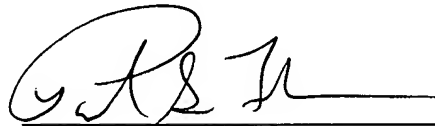
located is less thermally-sensitive than a second area of the substrate in which the second one of the N voltage regulator phases is located. In view of at least the foregoing reasons given above with respect to claim 1, amended independent claims 10 and 15 and their related dependent claims are believed to be in condition for allowance.

CONCLUSION

The outstanding Office Action presents a number of characterizations regarding the applied references, some of which are not directly addressed by this response. Applicants do not necessarily agree with the characterizations and reserve the right to further discuss those characterizations.

For at least the reasons given above, it is submitted that the entire application is in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience. Alternatively, if there remains any question regarding the present application or any of the cited references, or if the Examiner has any further suggestions for expediting allowance of the present application, the Examiner is kindly invited to contact the undersigned via telephone at (203) 972-4982.

Respectfully submitted,



Richard S. Finkelstein
Registration No. 56,534
Buckley, Maschoff & Talwalkar LLC
Attorneys for Intel Corporation
Five Elm Street
New Canaan, CT 06840
(203) 972-4982

May 23, 2006

Date